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10/666,171

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Samer R. White

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05/25/2006

RADER, FISHMAN & GRAUER PLLC  
39533 WOODWARD AVENUE  
SUITE 140  
BLOOMFIELD HILLS, MI 48304-0610

EXAMINER

SILVER, DAVID

ART UNIT

PAPER NUMBER

2128

DATE MAILED: 05/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/666,171

Applicant(s)

WHITE, SAMER R.

Examiner

David Silver

Art Unit

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 15-17 and 19-21 is/are rejected.
- 7) ☐ Claim(s) 12-14 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/5/05, 1/26/04 1/26/04
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Claims 1-21 are pending in Instant Application.

#### *Specification*

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc. (emphasis added)

3. The abstract of the disclosure is objected to because it repeats information given in the title.

Correction is required. See MPEP § 608.01(b).

Appropriate correction is required.

4. Paragraph 19 discloses "While the invention has been specifically described in connection with certain embodiments thereof, it is to be understood that this is by way of illustration and not of limitation, and the scope of the appended claims should be construed as broadly as the prior art will permit."

**MPEP 2111.01 Plain Meaning [R-3] recites in part:**

During examination, the claims must be interpreted as broadly as their terms reasonably allow. In re American Academy of Science Tech Center, \*\*>367 F.3d 1359, 1369, 70 USPQ2d 1827, 1834 (Fed. Cir. 2004)<

The claims will be therefore interpreted to their broadest reasonable meaning as defined in the specification.

#### *Claim Interpretation*

5. Displacement is interpreted as the difference between a new location and an old location (**spec para 3, 4, displacement formula in paragraph 17**).
6. The claimed invention is directed toward a simplified calculation of tangential velocity of a point on a rod, which rotates about a pivoting point.
7. Furthermore, for example in claims 2-4 and 19-20, the distance traveled by the "core" of the dummy head and the "outermost" point of the dummy head is equivalent. Therefore, the adjustment of

forward-directed displacement of the "outermost" point results in the same result, as such it does not further limit its parent claim.

***Claim Objections***

8. Claims 2-4, 19-20 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 2-4 and 19-20, the distance traveled by the "core" of the dummy head and the "outermost" point of the dummy head is equivalent. Therefore, the adjustment of forward-directed displacement of the "outermost" point results in the same result, as such it does not further limit its parent claim.
9. Claims 1, 2, 5, 6, and 7 are objected to because they use the phrase "comprising the step". This phrase should state "comprising a step".

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the **enablement requirement**. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.
11. Claim 6 recites a flexible tether. Claim 1 recites that the pivot point be fixed with respect to the dummy and the frame of reference. When a flexible tether is used this point would not be fixed. As such, the claim does not enable one of ordinary skill in the art to make and use the invention without undue experimentation.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject

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matter which the applicant regards as his invention.

12. Claims 2-4, 19-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The terms "outermost point" and "most likely" in claims 2 and 19 are relative terms which render the claim indefinite. The terms "outermost point" and "most likely" are not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "nearby" in claim 18 is a relative term which renders the claim indefinite. The term "nearby" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

13. Claims not specifically mentioned are rejected by virtue of their dependency.

14. The Applicants are required to fix all similar occurrences of the above-cited deficiencies.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claims 1-2, 4, 7, 8, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Berkeley, "ME176", (See PTO-892).

As per claim 1, Berkeley discloses: A method of simulating movement of a seat-belted occupant and estimating an amount of forwardly-directed displacement undergone by said seat-belted occupant with respect to an occupant's seat, comprising the steps of:

securing a test dummy at a first point that is both fixed with respect to said test dummy and fixed with respect to a fixed frame of reference, said first point selectively acting as a pivot point for said test dummy (**first point ... pivoting point; problem 2: establishing a pivoting point... Fx, Fy**);

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applying a linear force to a second point that is fixed with respect to said test dummy and offset from said first point, said linear force causing a measurable amount of forward-directed displacement of said second point with respect to said fixed frame of reference while causing said test dummy to pivot about said first point **(second point ... torso; Fig 2 velocity  $v$  (created by a force of the crash))**;

establishing a third point that is fixed with respect to said test dummy and offset from said first point and said second point, said third point undergoing an amount of forward-directed displacement with respect to said fixed frame of reference due to said pivoting of said test dummy **(third point ... head)**; and

estimating an amount of said forward-directed displacement occurring at said third point by multiplying said measurable amount of forward-directed displacement occurring at said second point by a ratio  $AD/AB$ , where  $AD$  represents a distance between said first point and said third point and where  $AB$  represents a distance between said first point and said second point **(part (ii) of question 2... calculate tangential velocity of the head. The 'r' component has the head displacement.  $(V_{head}-V_{cm})/\omega$ . The  $AD/AB$  component is inherent in the mathematics.)**.

As per claim 2, Berkeley discloses: The method according to claim 1, further comprising the step of adjusting said estimated amount of forward-directed displacement occurring at said third point to account for a difference between a location of said third point and a location of an outermost point of said test dummy most likely to first make contact with an object or defined region of space lying in front of said test dummy **(page 2, item (ii) ... "head impact" the outermost point is interpreted to be the head. According to the specification the outermost point can be any point on the test dummy.)**.

As per claim 4, Berkeley discloses: The method according to claim 2, wherein said adjusting step comprises the addition of an offset representing a distance between said third point and said outermost point of said test dummy **(This feature is claimed by claim 1 and does not further limit.)**.

As per claim 7, Berkeley discloses: The method according to claim 1, further comprising the steps of:

measuring an amount of time that said test dummy was subject to said application of said linear

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force (**page 2 (T0, T1, t)**); and

estimating a velocity of said test dummy by dividing said estimated amount of forward-directed displacement by said measured amount of time **page 2 (page 2 figure 2 (v))**.

As per claim(s) 8, note the rejection of claim(s) 1 above. The Instant Claim(s) is/are functionally equivalent to the above-rejected claim(s) and is/are therefore rejected under same prior-art teachings.

As per claim(s) 21, note the rejection of claim(s) 7 above. The Instant Claim(s) is/are functionally equivalent to the above-rejected claim(s) and is/are therefore rejected under same prior-art teachings.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. Claims 3, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkeley, "ME176", (See PTO-892) as applied to claim 1 above.

As per claim 3, Berkeley discloses all limitations of claim 2. Berkeley does not explicitly disclose that the outermost point of said test dummy is a nose. Official Notice is taken with respect to this limitation. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention that the nose is the outermost point and to use it to more accurately model an impact. In most instances the nose is the first point to make contact with an object in front of it. As such it would have been obvious to model it in such a way that resembles the most realistic and common occurring condition.

As per claim 6, Berkeley discloses the method according to claim 1. Berkeley further discloses the step of restraining said first point to said fixed frame of reference, with one end of said member attaching to said fixed frame of reference while an opposite end of said member attaches to said first point (**page 1**).

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**problem 2. seatbelt creates a static pivoting point about the hips which are effectively fixed to the point of reference (joint)).** Berkeley does not expressly disclose the restraint by means of a flexible tether. Official Notice is taken with respect to this limitation. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to include said features in order to more realistically simulate the restraint system of actual seat belts. All seatbelts have a certain amount slack and flexibility. As such, it would have been obvious to use an actual seatbelt in an automotive crash test simulation in order to achieve a realistic simulation result. This is demonstrated in US Patent 4,985,835 (**col: 5 line: 17-35**) ("Sterler").

17. Claims 5, 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkeley, "ME176", (See PTO-892) as applied to claim 1 above in view of Strand (**US 5,373,749**).

As per claim 5, Berkeley discloses the method according to claim 1. Berkeley further discloses the step of restraining said first point to said fixed frame of reference, with one end of said member attaching to said fixed frame of reference while an opposite end of said member attaches to said first point (**page 1**.

**problem 2. seatbelt creates a static pivoting point about the hips which are effectively fixed to the point of reference (joint)).** Berkeley does not expressly disclose the restraint by means of a rigid, non-extendable member. Strand however discloses the said limitations (**Fig 1, example item 28**). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to more realistically simulate the restraint system of, for example, rollercoaster rides.

As per claim 11, Berkeley discloses all limitations of claim 10. Berkeley does not however explicitly disclose a support brace affixed to said test dummy and connecting said test dummy to said drive guide. Strand however discloses this limitation (**Fig 1, 2, 3, 4 for example items 23**). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to allow the dummy to remain in the vertical "sitting up" position while the test the restraint system and simulating the person in order to achieve the most realistic simulation and afterwards to be able to



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pivot down about its fixed axis in order to simulate the head and torso during car crashes.

As per claim 12, Berkeley discloses all limitations of claim 11. Berkeley does not however explicitly disclose that said first and second points are located on said support brace, and said third point is located on said test dummy. Strand however discloses this limitation (**Fig 1, 2, 3, 4 for example items 42, 28, and 11**). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to allow the dummy to remain in the vertical "sitting up" position while the test the restraint system and simulating the person in order to achieve the most realistic simulation and afterwards to be able to pivot down about its fixed axis in order to simulate the head and torso during car crashes.

As per claim 14, Berkeley discloses all limitations of claim 12. Berkeley does not however expressly disclose a restraining system that fixes said first point with respect to said support guide. Strand however discloses this limitation (**Fig 1, 2, 3, 4 for example items 31, 29, 20A, 22**). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to allow the dummy to be reset to its original position faster and therefore allow simulations to take place time efficiently.

As per claim(s) 9, 10, 13, and 15 note the rejection of claim(s) 5 above. The Instant Claim(s) is/are functionally equivalent or inherent to the above-rejected claim(s) and is/are therefore rejected under same prior-art teachings. The drive guide is the arc by which the head of the dummy moves.

18. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkeley, "ME176", (See PTO-892) as applied to claim 1 above in view of Strand (US 5,373,749) and in further view of taken Official Notice.

As per claim 6, Berkeley discloses the method according to claim 1. Berkeley further discloses the step of restraining said first point to said fixed frame of reference, with one end of said member attaching to said fixed frame of reference while an opposite end of said member attaches to said first point (**page 1. problem 2. seatbelt creates a static pivoting point about the hips which are effectively fixed**

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**to the point of reference (joint)).** Berkeley does not expressly disclose the restraint by means of a flexible tether. Official Notice is taken with respect to this limitation. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to include the said features in order to more realistically simulate the restraint system of actual seat belts. All seatbelts have a certain amount slack and flexibility. As such, it would have been obvious to use an actual seatbelt in an automotive crash test simulation in order to achieve a realistic simulation result. This is demonstrated in US Patent 4,985,835 **(col: 5 line: 17-35)** ("Sterler").

As per claim 17, Berkeley discloses: The system according to claim 16, wherein said estimation of said forward displacement occurring at said third point is established with respect to a starting position of said test dummy, said starting position corresponding to a state of said system where any forward displacement at said second point results in said test dummy beginning to tilt about said first point (This is inherent in Berkeley's disclosed system as the rod is positioned straight vertically).

18. Claims 18, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkeley, "ME176", (See PTO-892) as applied to claim 1 above in view of Strand (US 5,373,749) and in further view of taken Official Notice in view of Nagle **(US 5,335,190)**.

As per claim 18, Berkeley discloses all limitations of claim 17. Berkeley however does not disclose an inclinometer mounted at or nearby said second point, said inclinometer detecting when said test dummy begins to tilt about said first point, thereby indicating when said test dummy is in said starting position. There are two ways of measuring the tangent velocity: first method is with an accelerometer, and the second method is with an inclinometer. One measures the acceleration while the other measures the angle, both of which are used to derive tangential acceleration and displacement. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to use either an inclinometer or an accelerometer (which is implicitly used in Berkeley).

As per claim 19, Berkeley discloses: The method according to claim 1, further comprising the step of adjusting said estimated amount of forward-directed displacement occurring at said third point to account

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for a difference between a location of said third point and a location of an outermost point of said test dummy most likely to first make contact with an object or defined region of space lying in front of said test dummy (page 2, item (ii) ... "head impact" the outermost point is interpreted to be the head.

According to the specification the outermost point can be any point on the test dummy.).

As per claim 20, Berkeley discloses: The method according to claim 2, wherein said adjusting step comprises the addition of an offset representing a distance between said third point and said outermost point of said test dummy (This feature is claimed by claim 1 and does not further limit.).

***Conclusion***

19. Claims 1-21 are rejected.

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Silver whose telephone number is (571) 272-8634. The examiner can normally be reached on Monday thru Friday, 10am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Silver  
Patent Examiner  
Art Unit 2128

/ds/

**HUGH JONES Ph.D.**  
**PRIMARY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2100**  
